

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE
In its capacity as elected Office

Date of mailing (day/month/year) 12 January 2001 (12.01.01)	
International application No. PCT/US00/07980	Applicant's or agent's file reference
International filing date (day/month/year) 24 March 2000 (24.03.00)	Priority date (day/month/year) 21 May 1999 (21.05.99)
Applicant BIRNBAUM, Jack, M. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:09 November 2000 (09.11.00)☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Henrik Nyberg Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 23 APR 2001

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Applicant's or agent's file reference GIC-576 PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/07980	International filing date (day/month/year) 24 MARCH 2000	Priority date (day/month/year) 21 MAY 1999
International Patent Classification (IPC) or national classification and IPC IPC(7): H04N 7/10 and US Cl.: 725/151		
Applicant GENERAL INSTRUMENT CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>3</u> sheets. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>0</u> sheets.
3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 09 NOVEMBER 2000	Date of completion of this report 25 MARCH 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer JOHN W. MILLER <i>Rugenia Zogan</i> Telephone No. (703) 305-4795

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/07980

I. Basis of the report

1. With regard to the elements of the international application:*

☒ the international application as originally filed☒ the description:

pages 1-17, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

☒ the claims:

pages 18-24, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

☒ the drawings:

pages 1, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

☒ the sequence listing part of the description:

pages NONE, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
☒ the claims, Nos. NONE
☒ the drawings, sheets/fig NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

**Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/07980

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. statement**

Novelty (N)	Claims <u>1-30</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>1-30</u>	YES
	Claims <u>NONE</u>	NO
Industrial Applicability (IA)	Claims <u>1-30</u>	YES
	Claims <u>NONE</u>	NO

2. citations and explanations (Rule 70.7)

Claims 1-30 meet the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest that set forth in independent claims 1 and 16. The Bacon et al and Lett references are applicable only in the most basic sense. The most relevant art of record, the McClellan et al reference discloses a layered software architecture for a digital set top box, in which there are layers, or modules, for supporting hardware functions, for acting as device drivers, for interfacing with the device drivers, for providing core system software, in the form of a OS-9 or OS-9000 kernel, and for providing middleware, in the form of either the RAVE or MAUI programs, to interface player shell and application programs. The reference differs from that set forth in the claims in that it fails to teach or suggest a 'kernel abstraction function' as part of a core system software module which, in concert with an interface for device drivers, enables the core system software to operate in different operating environments.

----- NEW CITATIONS -----

US 5,440,632 A (BACON et al) 08 August 1995, see whole document.

US 5,619,250 A (MCCLELLAN et al) 08 April 1997, see whole document.

US 5,771,064 A (LETT) 23 June 1998, see whole document.

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
30 November 2000 (30.11.2000)

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(10) International Publication Number
WO 00/72583 A1

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(25) Filing Language: English

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60/135,221 21 May 1999 (21.05.1999) US

(71) Applicant (for all designated States except US): GENERAL INSTRUMENT CORPORATION [US/US]; 101 Tournament Drive, Horsham, PA 19044 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): BIRNBAUM, Jack, M. [US/US]; 559 Nicole Drive, Southampton, PA 18966 (US). DEL SORDO, Chris [US/US]; 229 Heatherfield

Drive, Souderton, PA 18964 (US). GAZDA, Robert [US/US]; 42 Le Forge Court, Wayne, PA 19087 (US).

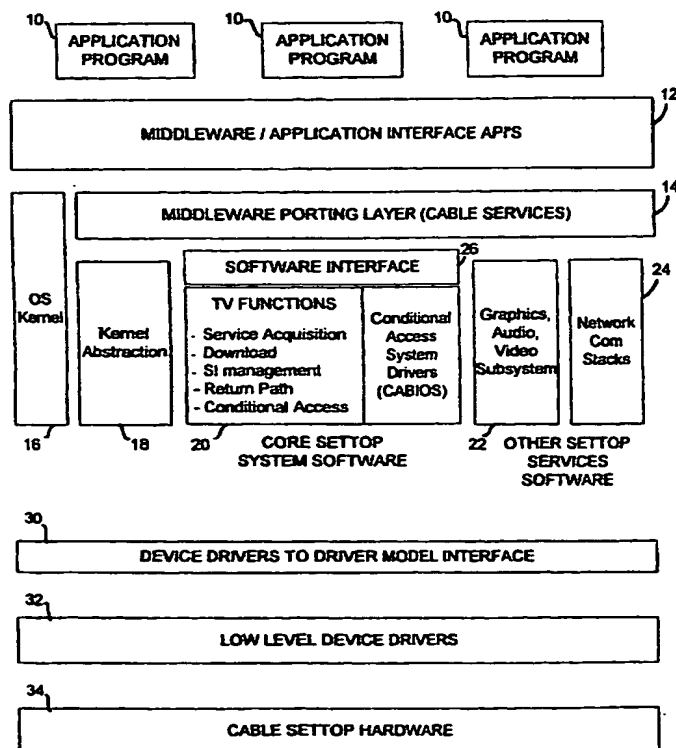
(74) Agent: LIPSITZ, Barry, R.; 755 Main Street, Building No. 8, Monroe, CT 06468 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: SOFTWARE ARCHITECTURE FOR A TELEVISION SET-TOP TERMINAL PROVIDING COMPATIBILITY WITH MULTIPLE OPERATING ENVIRONMENTS



(57) Abstract: A software architecture is provided to enable core television set-top software (20) to run in different operating environments. A kernel abstraction component (18) uses kernel calls and kernel-specific translations to abstract operating system-specific functions from an operating system kernel (16). The functions are made available to the core software (20) in a generic format. Additionally, a device drivers-to-driver model interface (30) separates the details of the driver model environment from the core system software (20). Furthermore, a software interface (26) allows application programs (10) (such as program guides, games, and Internet web browsers) and middleware (12) to communicate with the core set-top system software (20). The core software allows the set-top to provide television functions such as service acquisition, system information management, download capability, return path communication, set-top configuration, and conditional access control.

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Published:

— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

Internat'l Application No

PCT/US 00/07980

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N5/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 909 094 A (CANAL PLUS SA) 14 April 1999 (1999-04-14) column 6, line 1 -column 8, line 48 abstract; figure 3	1-30
X	HURLEY T R: "EVOLUTION OF THE DIGITAL SET TOP BOX" INTERNATIONAL BROADCASTING CONVENTION, GB, LONDON, no. 428, 1996, pages 277-282, XP000905436 section "Software architecture and interactive services" figure 4	1-30

-/-

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

27 July 2000

Date of mailing of the international search report

09/08/2000

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La, V

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 00/07980

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	SUN MICROSYSTEMS, INC: "Java TV API Specification" DRAFT 0.9.0, 'Online! 14 June 1999 (1999-06-14), XP002143725 Retrieved from the Internet: <URL:http://java.sun.com/products/javatv/javatvspec0_9_0.html> 'retrieved on 2000-07-27! section 1. "Introduction" Introduction of subsection 2.2 "Software environment" and figure 2 subsection 2.2.2.3 "Security"	1-30
A	EP 0 813 147 A (LSI LOGIC CORP) 17 December 1997 (1997-12-17) column 3, line 11 -column 5, line 9 column 5, line 31 -column 6, line 46 figures 1-3	1-30
A	ITOH J -I ET AL: "A NEW SOFTWARE ARCHITECTURE FOR EVOLVABLE MULTIMEDIA SOFTWARE" EUROPEAN TRANSACTIONS ON TELECOMMUNICATIONS, IT, EUREL PUBLICATION, MILANO, vol. 8, no. 4, 1 July 1997 (1997-07-01), pages 423-435, XP000695449 ISSN: 1124-318X the whole document	1-30
A	THRIFT P ET AL: "JTV - Java-enabled Television" PROCEEDINGS OF THE SPIE, 4 November 1997 (1997-11-04), XP002090497 section 1. "Introduction" section 2. "JTV API Overview" abstract; figure 1	1-30
A	EVAIN J -P: "THE MULTIMEDIA HOME PLATFORM" EBU REVIEW- TECHNICAL, BE, EUROPEAN BROADCASTING UNION. BRUSSELS, no. 275, 21 March 1998 (1998-03-21), pages 4-10, XP000767493 ISSN: 0251-0936 the whole document	1-30
	-/-	

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 00/07980

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>WILLIAMS T: "STB OPERATING SYSTEMS GEAR UP FOR FLOOD OF DATA SERVICES" COMPUTER DESIGN, US, PENNWELL PUBL. LITTLETON, MASSACHUSETTS, vol. 35, no. 2, 1 February 1996 (1996-02-01), pages 67-68, 72, 74-76, XP000555483 ISSN: 0010-4566 the whole document</p>	1-30
A	<p>B. MARSTELLER AND R. BAER: "Sun announces key consumer technology to bring the power of the JAVA platform to auto, TV and phone markets" PRESS RELEASE, 'Online! 24 March 1998 (1998-03-24), XP002143726 Retrieved from the Internet: <URL:http://www.javasoft.com/pr/1998/03/pr980324-04.html> 'retrieved on 2000-07-27! section "JavaTV API"</p>	1-30

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/07980

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0909094 A	14-04-1999	AU 9363298 A	27-04-1999
		EP 1021918 A	26-07-2000
		WO 9918730 A	15-04-1999
		ZA 9809081 A	13-04-1999
EP 0813147 A	17-12-1997	US 5946487 A	31-08-1999
		JP 10069394 A	10-03-1998